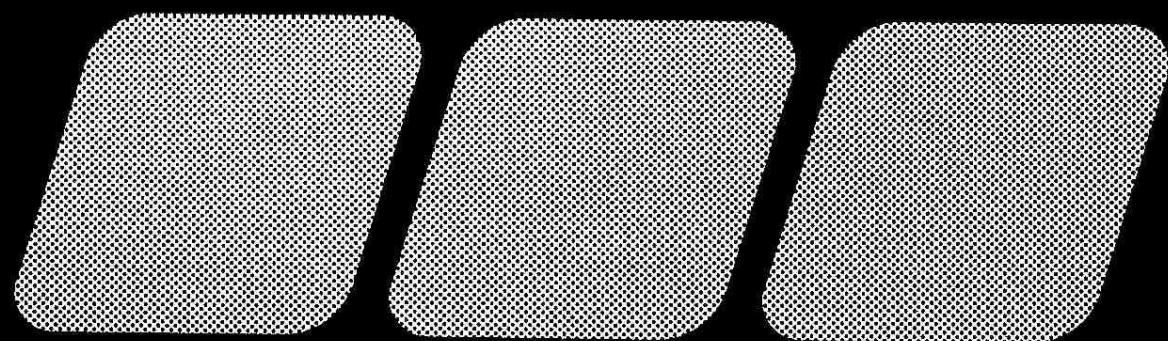


**SCHEMATIC
DIAGRAM**

CRUMAR[®]

Musical Instruments



***mod.
T3***



FEMALE CONNECTOR SYMBOL (es.J 2/1)



PLUG IN CONNECTOR SYMBOL



WIRE SOLDERING POINT



TEST POINT (T.P...)



CONNECTING POINT (ON p.c.b.)



METALLIC FILM RESISTOR 1%

ALL resistors 1/4w unless otherwise indicated

ALL tab switches shown in OFF position

ALL key switches shown in OFF position

See part list for component part numbers

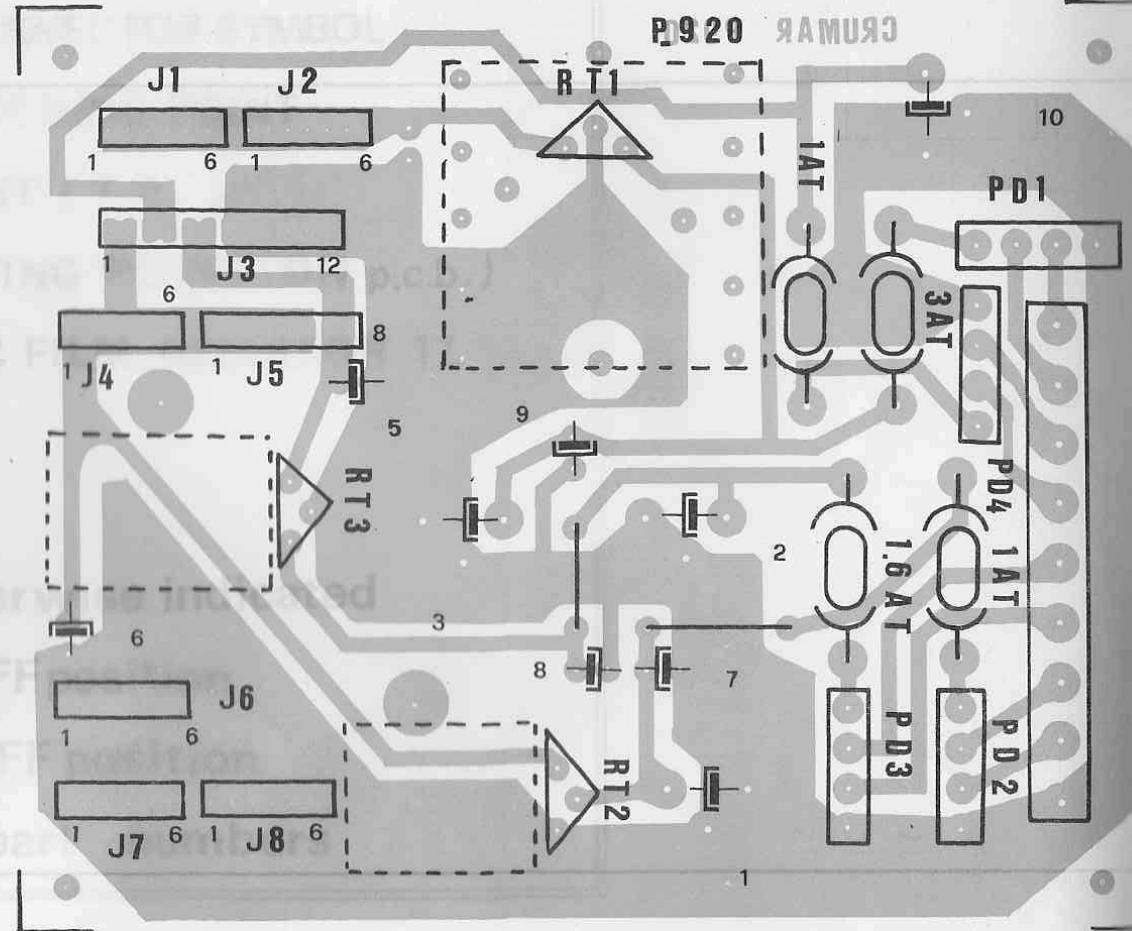
CRUMAR RESERVES THE RIGHT TO CHANGE
SPECIFICATIONS AND DESIGNS, WITHOUT
NOTICE AND LIABILITY.

**SCHEMATIC
DIAGRAM**

***mod.*
*T 3***

INDEX

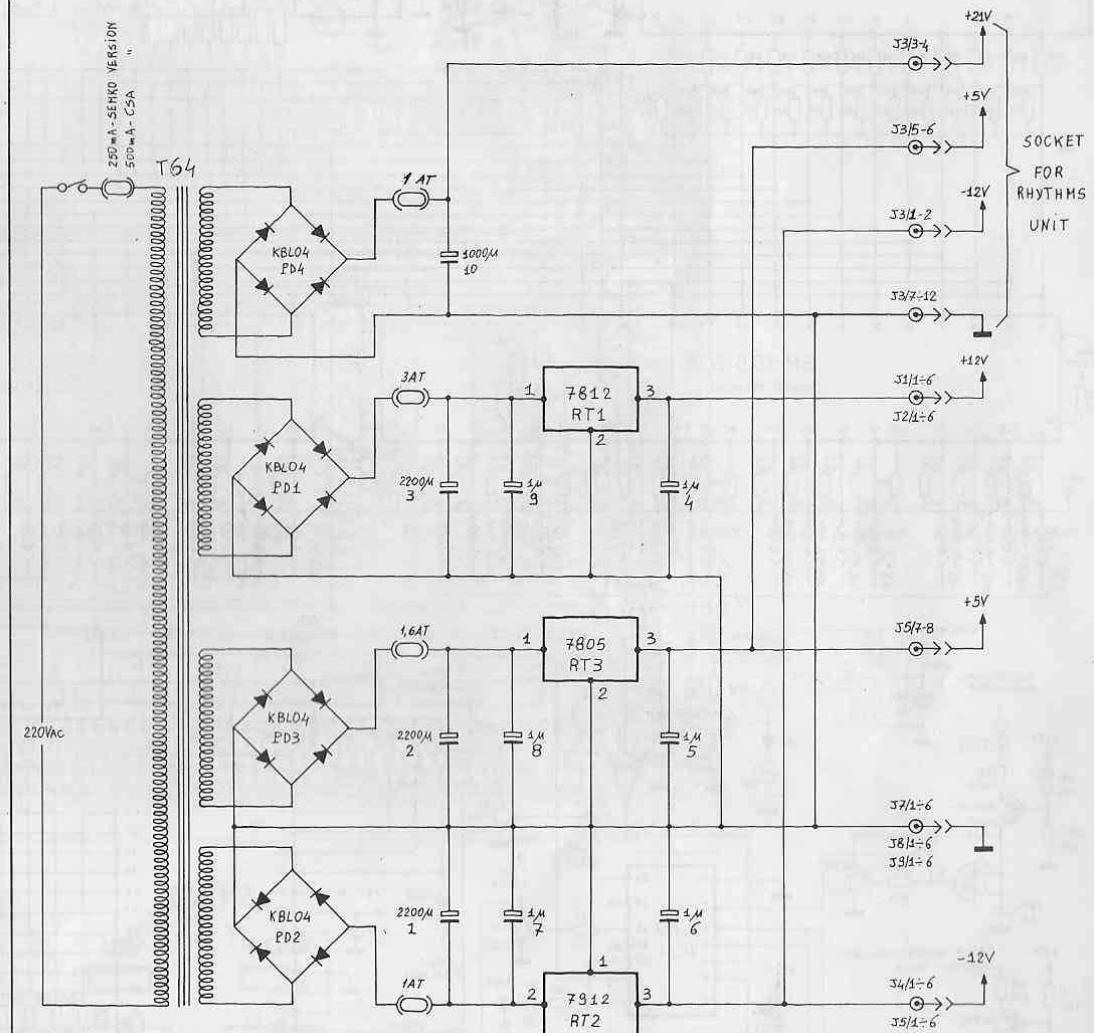
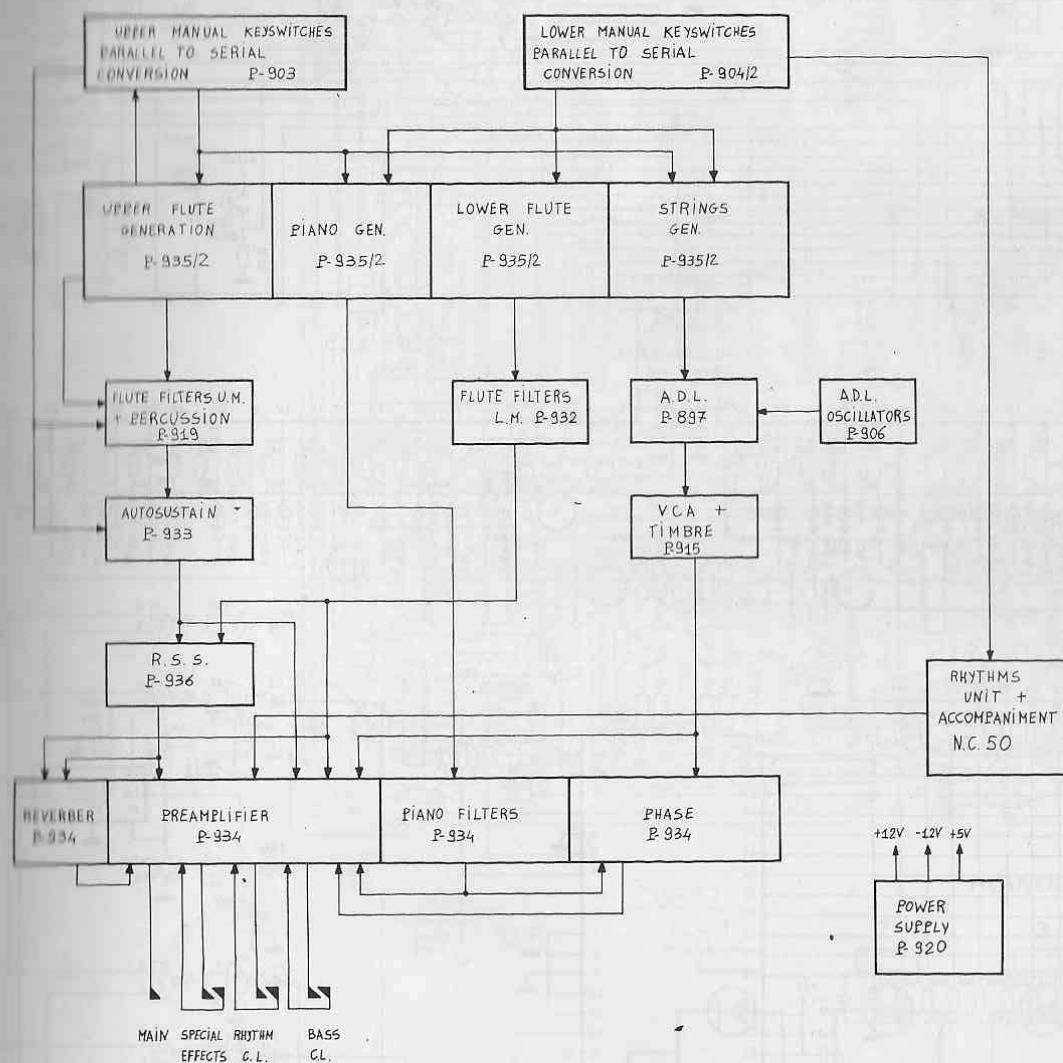
DWG 1 (P-920) = POWER SUPPLY
 DWG 2 (P-935/2) = FLUTES - PIANO - STRINGS
 GENERATION
 DWG 2 (P-927) = PIANOS SWITCHES
 DWG 2 (P-938) = POTENTIOMETER BOARD
 DWG 3 (P-903) = UPPER MANUAL KEYSWITCHES
 DWG 3 (P-904/2) = LOWER MANUAL KEYSWITCHES
 DWG 4 (P-919) = FLUTE FILTERS UPPER MANUAL
 DWG 4 (P-922) = AUTO SUSTAIN - PRESETS SWITCHES
 DWG 4 (P-926) = PERCUSSION SWITCHES
 DWG 5 (P-932) = FLUTE FILTERS LOWER MANUAL
 DWG 5 (P-921) = FLUTE L.M. - CANCEL UP - LOW
 SWITCHES
 DWG 5 (P-937) = VOLUME CONTROLS
 DWG 6 (P-933) = AUTO SUSTAIN
 DWG 6 (P-936) = R.S.S.
 DWG 6 (P-925) = R.S.S. SWITCHES
 DWG 6 (P-922) = AUTO SUSTAIN - PRESETS SWITCHES
 DWG 7 (P-906) = A.D.L. OSCILLATORS
 DWG 7 (P-897) = DELAY LINES
 DWG 7 (P-915) = STRINGS SWITCHES
 DWG 7 (P-937) = VOLUME CONTROLS
 DWG 7 (P-929) = STRINGS CONTROLS
 DWG 8 (P-923) = BASS SWITCHES
 DWG 8 (P-938) = POTENTIOMETER BOARD
 DWG 8 (P-930) = PEDALBOARD
 DWG 8 (P-931) = PEDALBOARD KEYSWITCHES
 DWG 9 (P-934) = FINAL PREAMPLIFIERS
 DWG 9 (P-924) = PHASE SWITCHES
 DWG 9 (P-927) = PIANOS SWITCHES
 DWG 9 (P-937) = VOLUME CONTROLS
 DWG 9 (P-938) = POTENTIOMETER BOARD



QUESTO DISEGNO È PROPRIETÀ PRIVATA E NON PUÒ ESSERE
MOSTRATO A TERZI SENZA NOSTRA APPROVAZIONE SCRITTA.

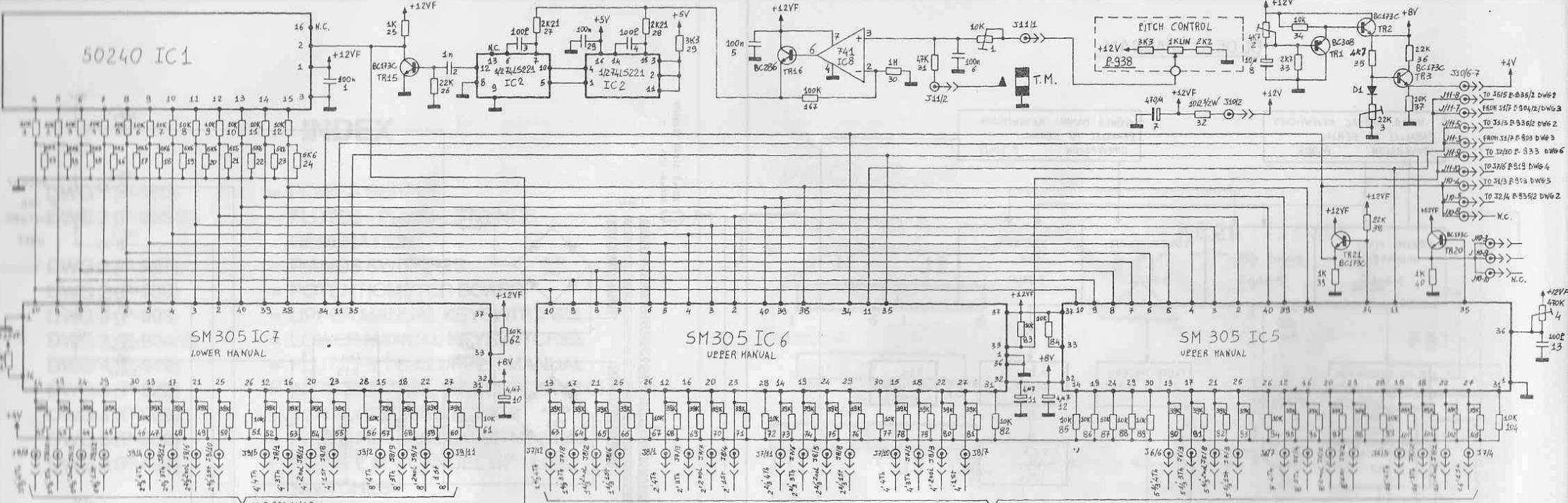
CRUMAR		MODEL: T3
DRAWN BY	Baroni G.	REVISION
DESIGNED BY		
DATE		

BLOCK DIAGRAM



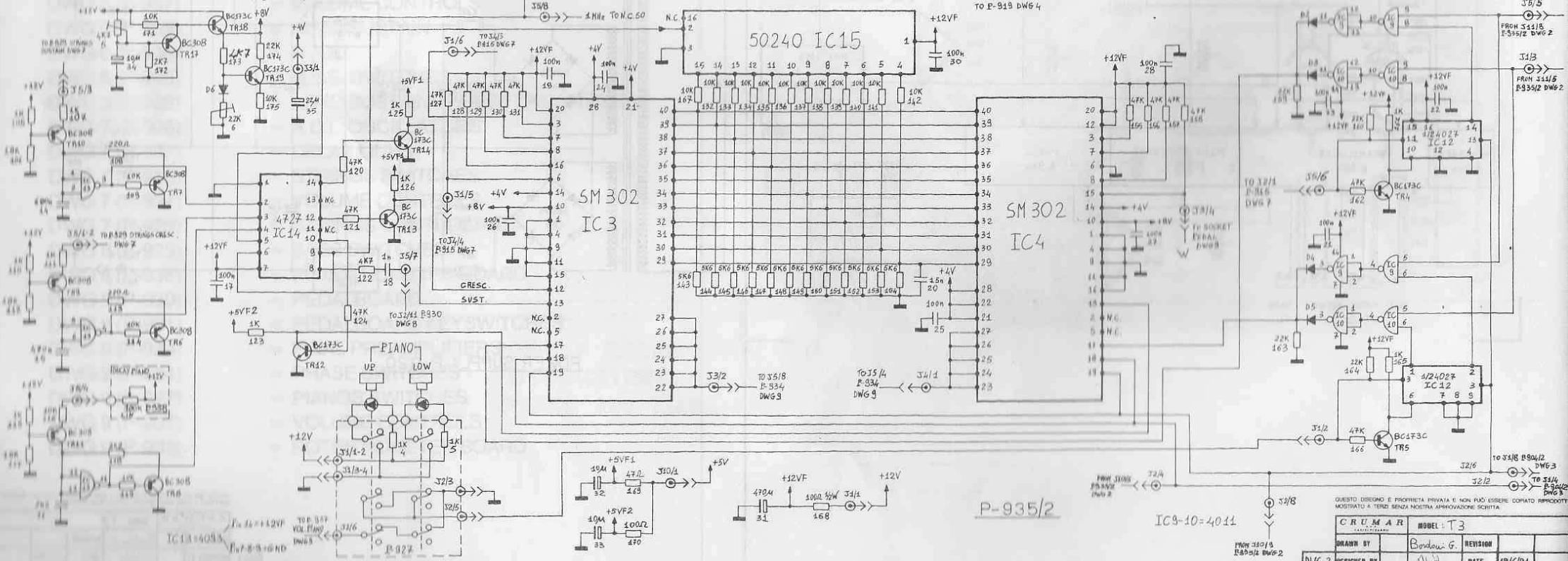
POWER SUPPLY P-920

50240 IC1



SM305 IC7
LOWER MANUAL

TO P-932 DWG 5



SM305 IC6
UPPER MANUAL

SM 305
UPPER MANUAL

SM 302
IC3

50240 IC15

SM 302

IC4

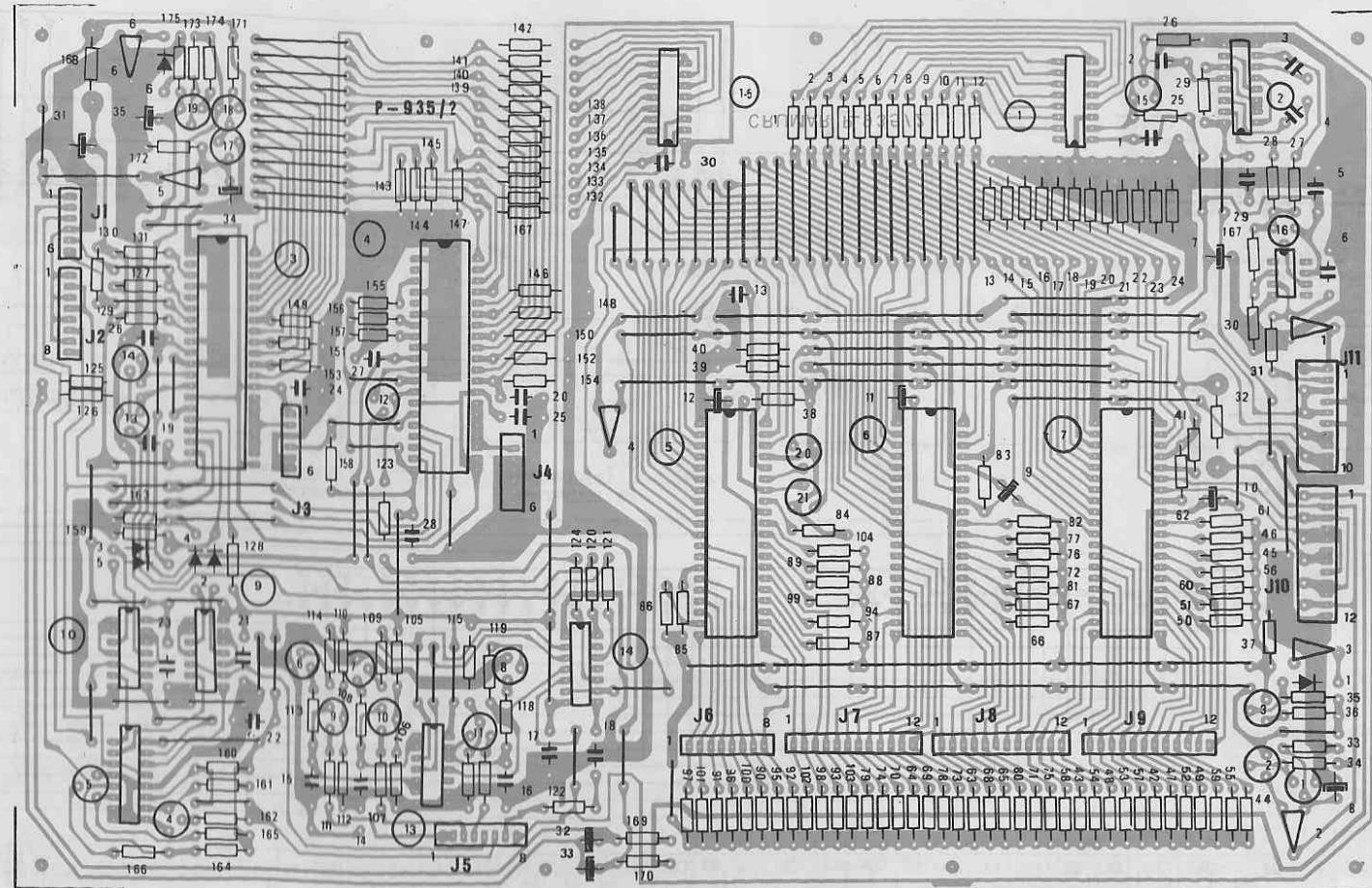
P-935/2

QUESTO DISEGNO E' PROPRIETÀ PRIVATA E NON PUÒ ESSERE COPIATO RIPRODOTTO
MOSTRATO A TERZI SENZA NOSTRA APPROVAZIONE SCRITTA

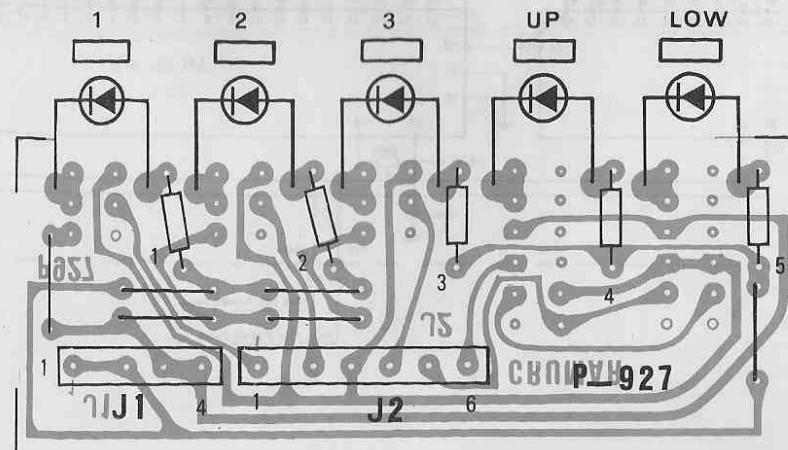
CRUMAR MODEL: T3

DRAWN BY Bondi G. REVISION DWG 2

DESIGNED BY [Signature] DATE 19/6/81

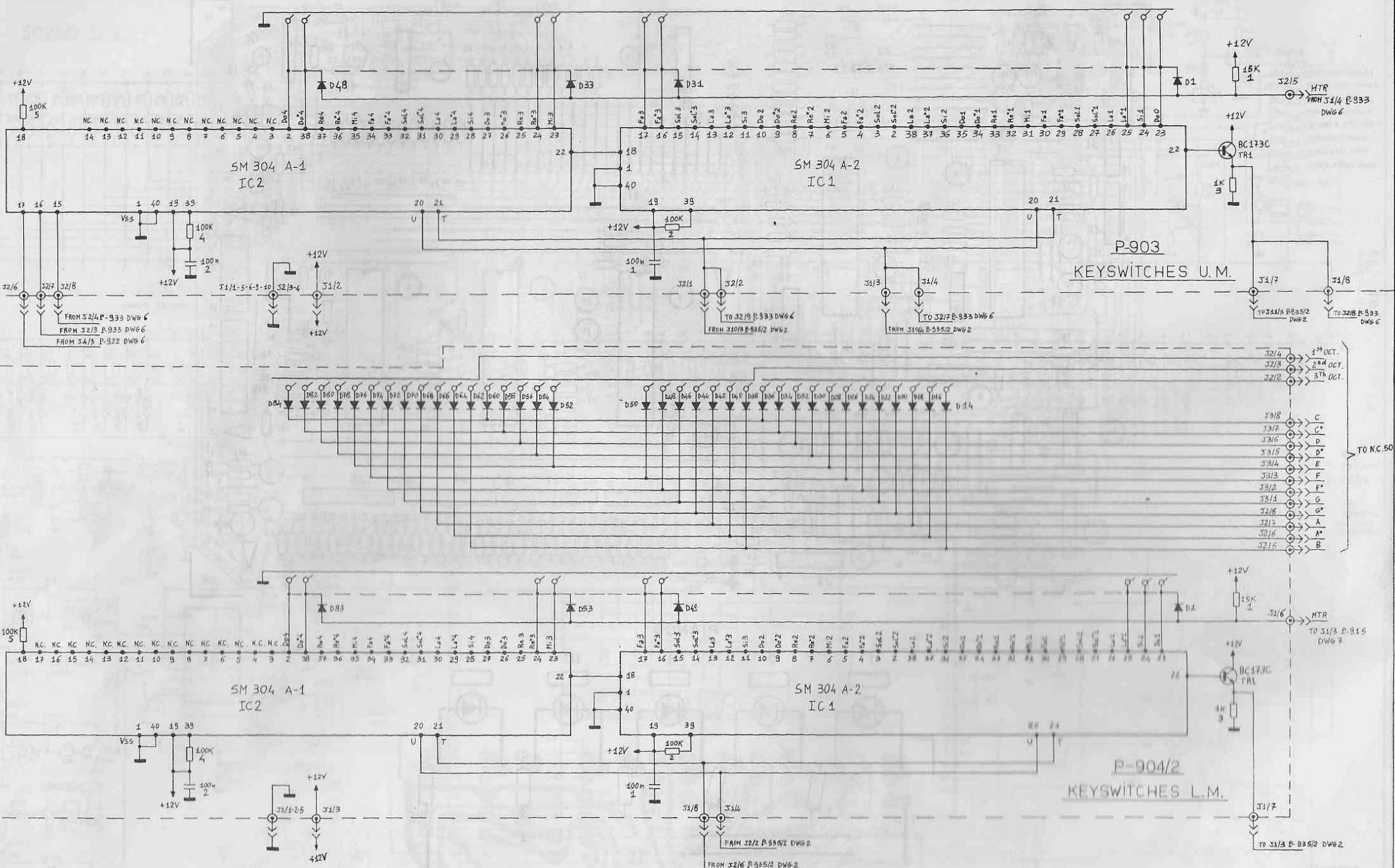


PIANOS

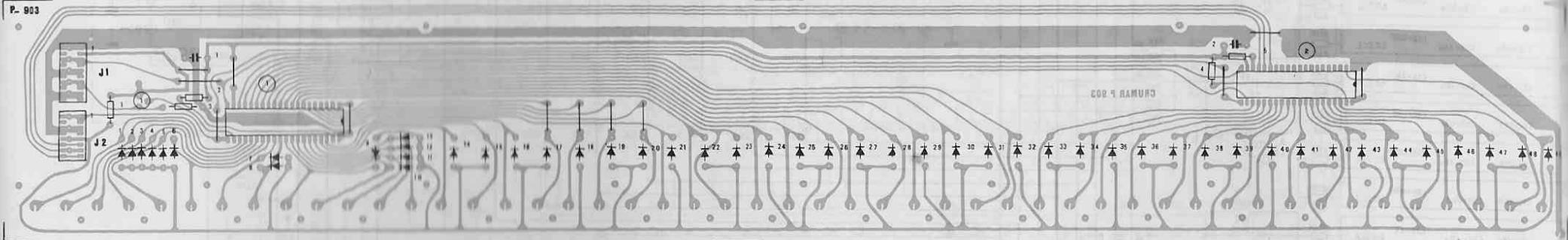


QUESTO DISEGNO È PROPRIETÀ PRIVATA E NON PUÒ ESSERE COPIATO SENZA CONSENTITO MOSTRATO A TERZI SENZA NOTORIA APPROVAZIONE SCRUTA.

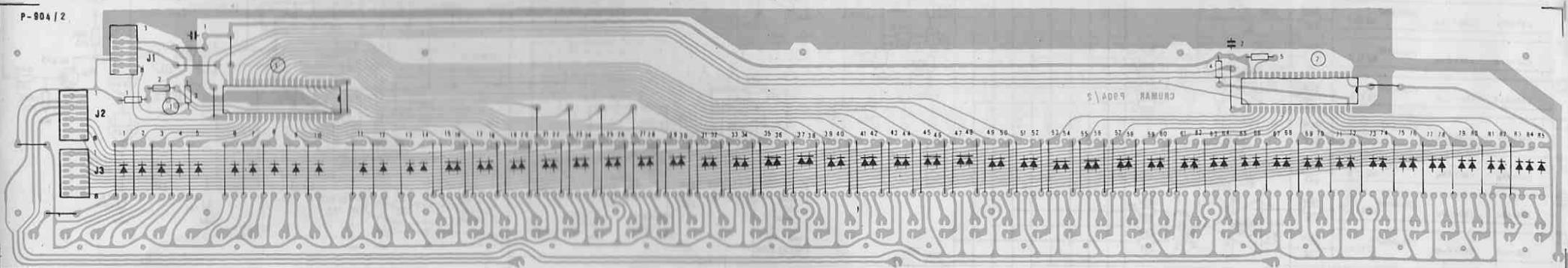
CRUMAR CRAFTSMANSHIP		MODEL T-1		
DRAWN BY	Brendan G.		REVISION	
DESIGNED BY	<i>[Signature]</i>		DATE	10/6/03

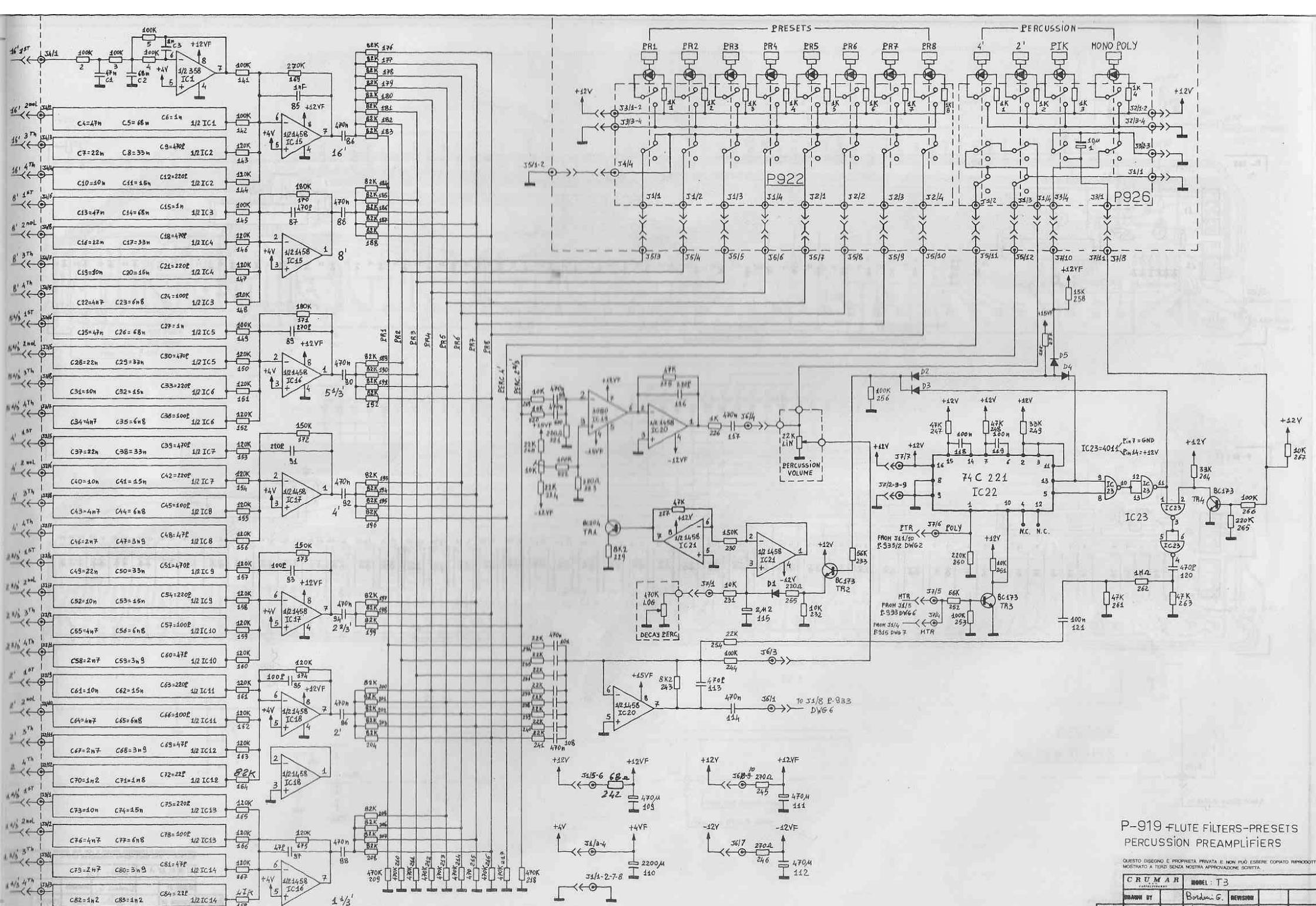


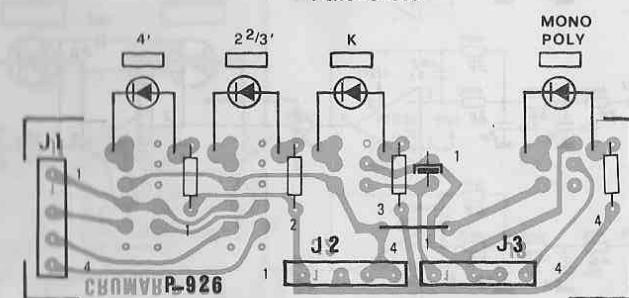
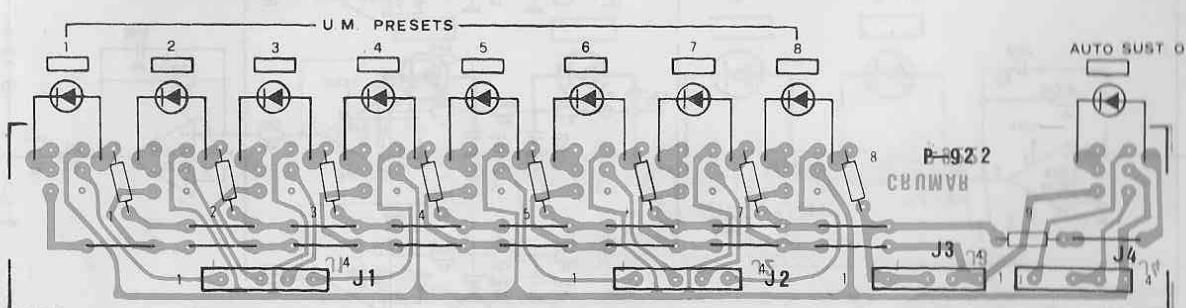
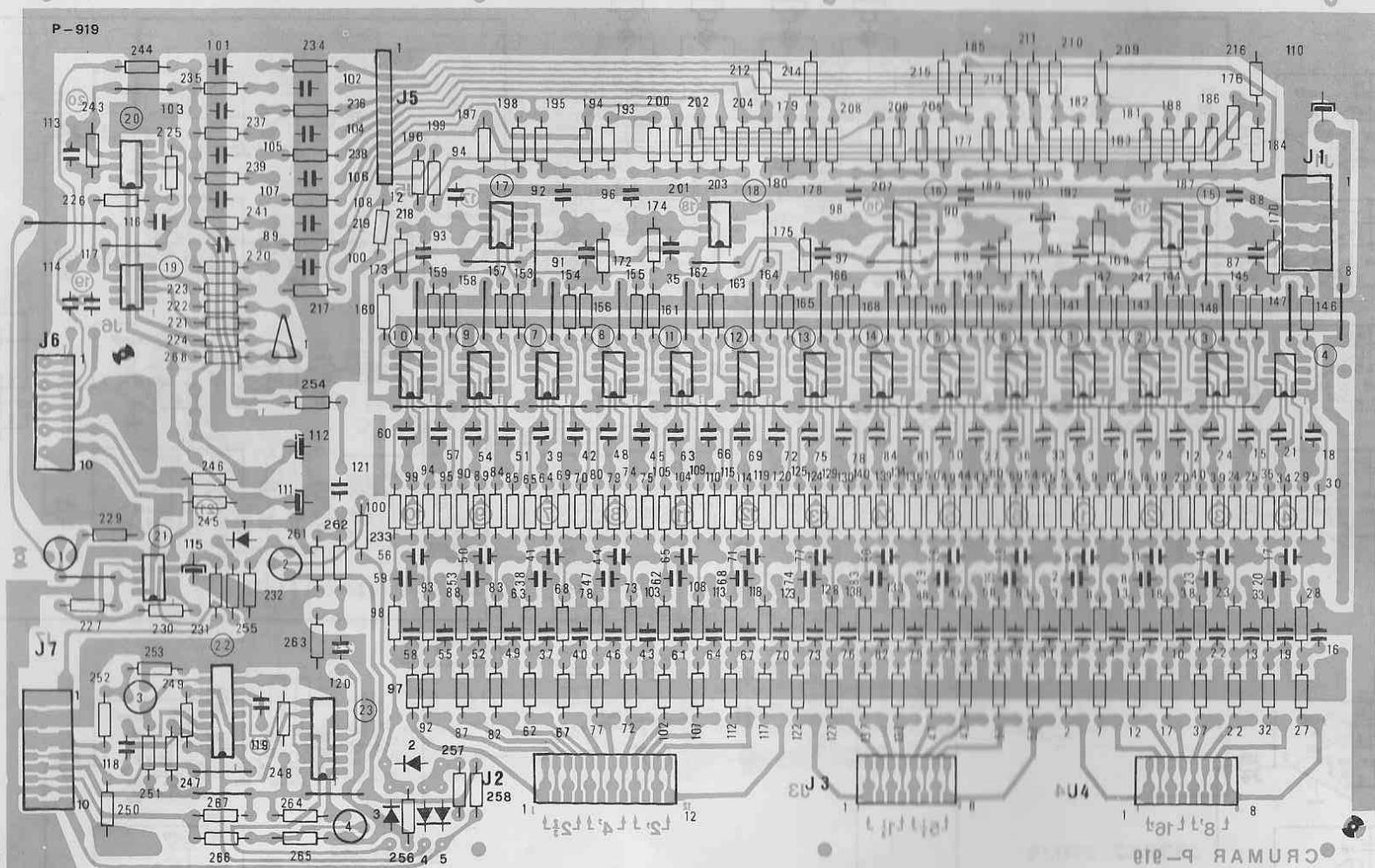
P-903



P-904 / 2

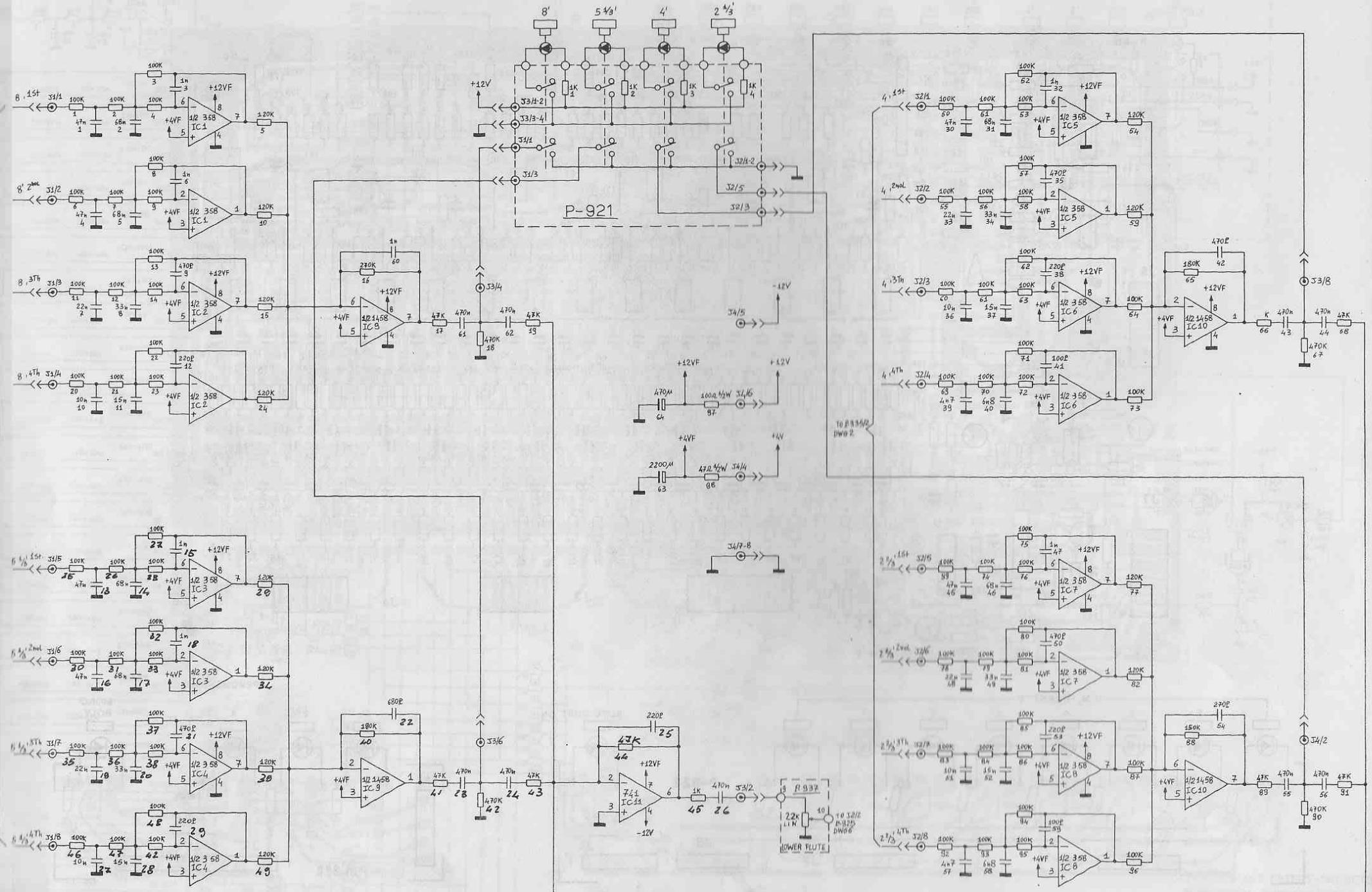






QUESTO DISEGNO È PROPRIETÀ PRIVATA E NON PUÒ ESSERE RIPRODOTTO
MOSTRATO A TERZI SENZA NOSTRA APPROVAZIONE SCRITA

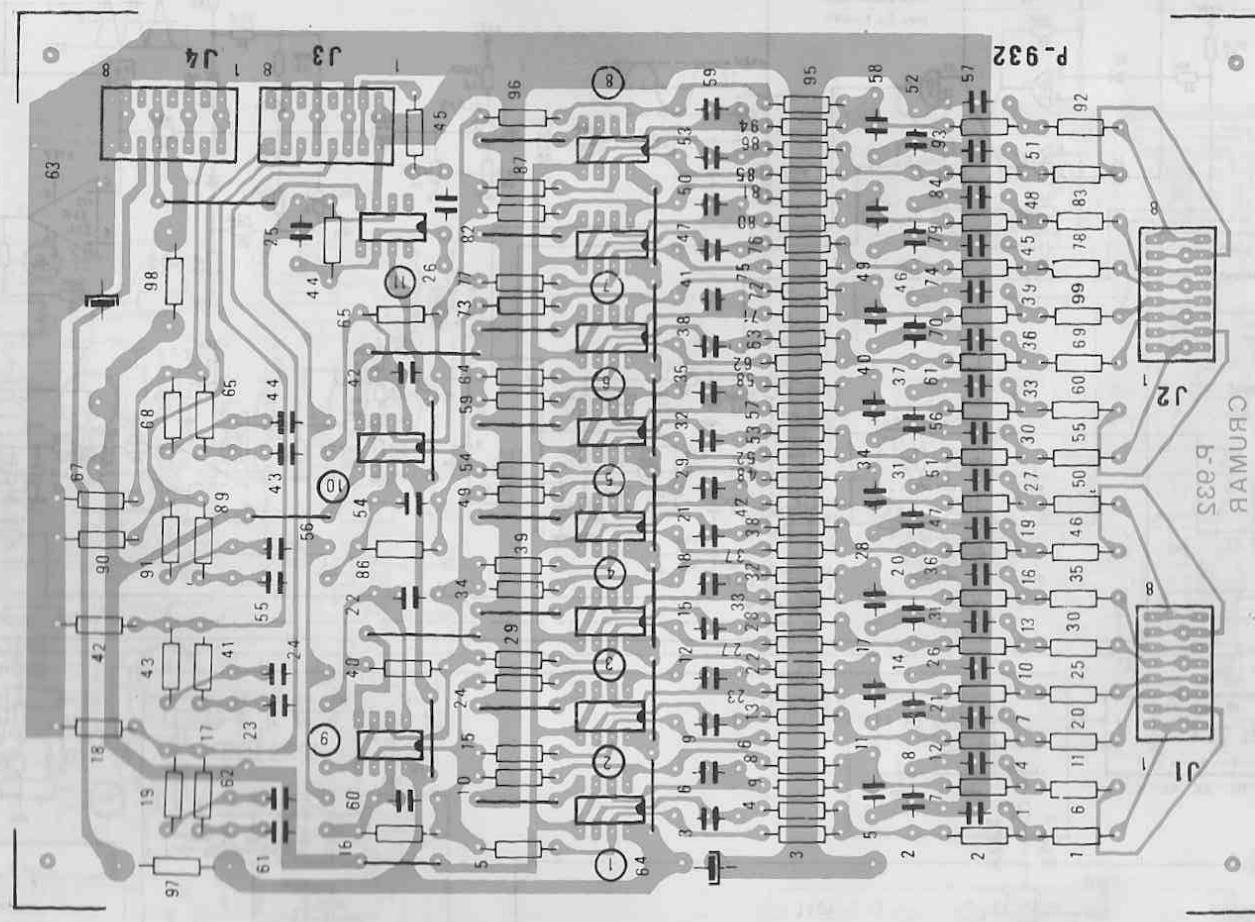
CRUMAR	MODEL: T3
DRAWN BY	Bonacini G.
DESIGNED BY	Stell
DATE	19/6/81



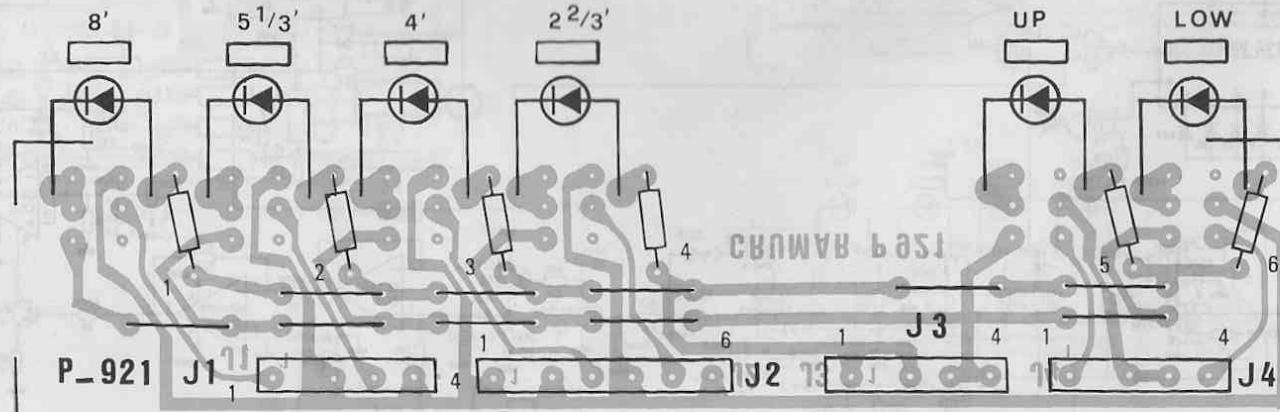
QUESTO DISEGNO È PROPRIETÀ PRIVATA E NON PUÒ ESSERE COPIATO, RIPRODOTTO
O MOSTRATO A TERZI SENZA LA APPROVAZIONE SCRITTA.

P-932

CRUMAR		MODEL: T3
DRAWN BY	Bordoni G.	REVISION
DESIGNED BY	Ajello	DATE 196/81
DWG#		



L. M. FLUTE

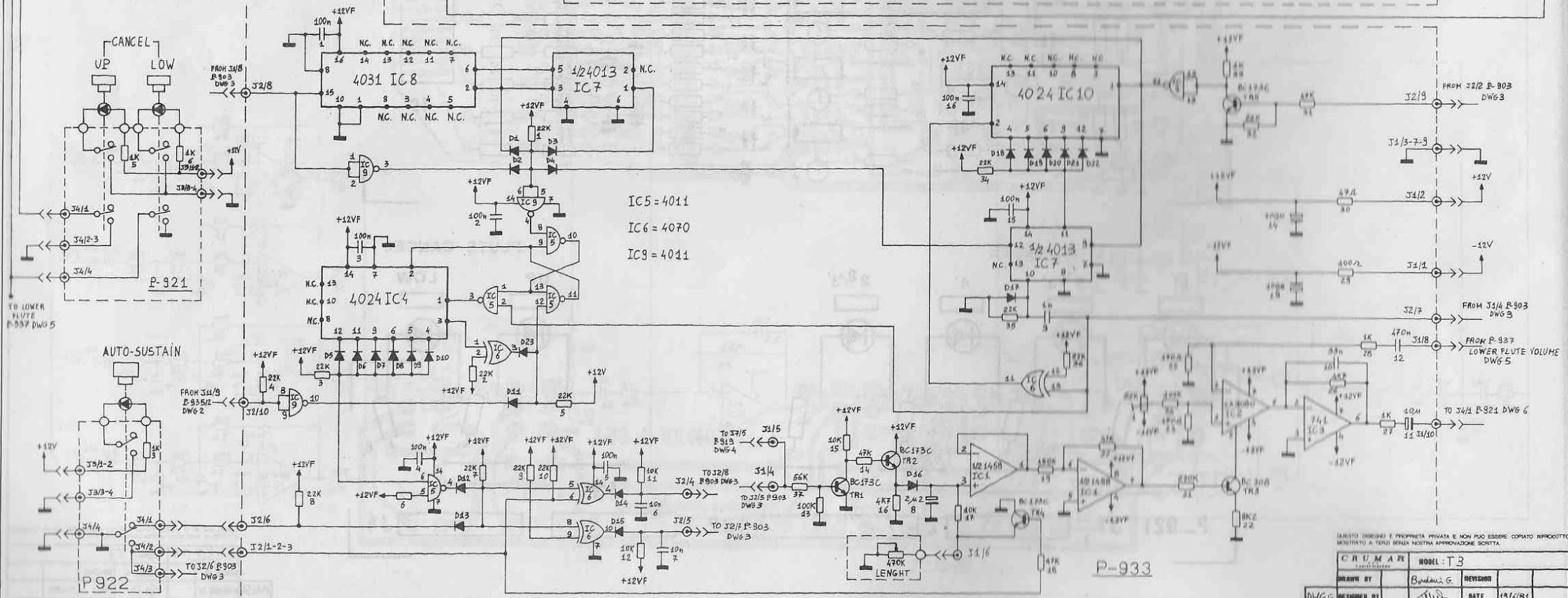
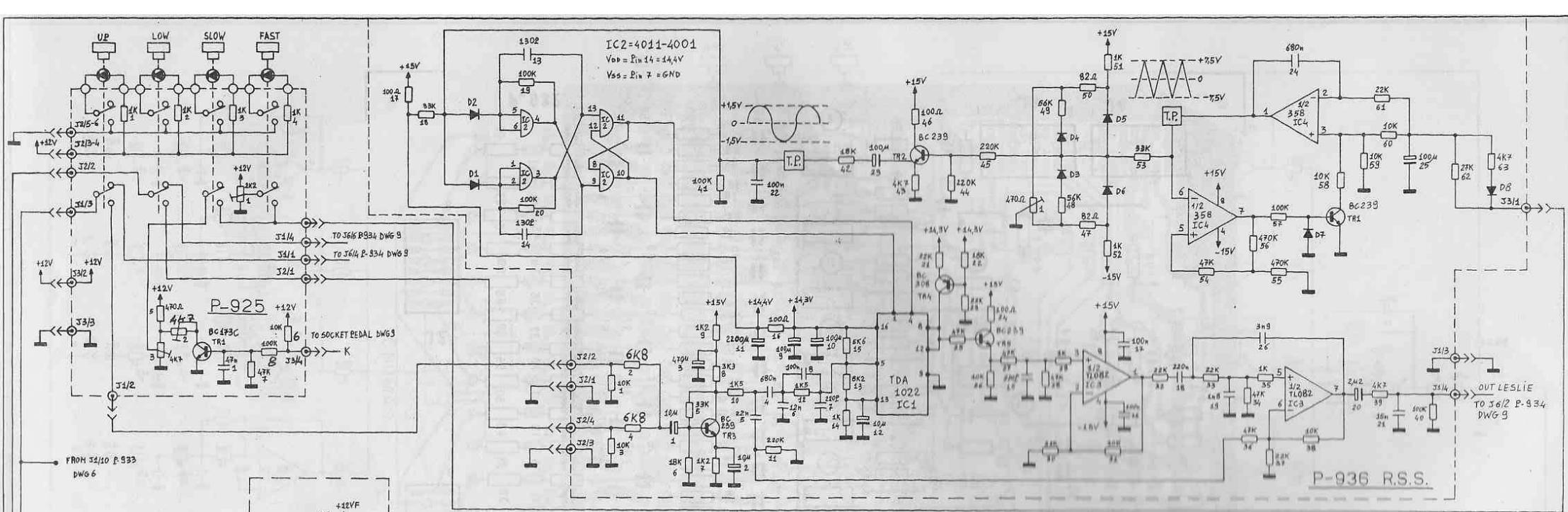


FLUTE CANCEL

СВОМЯ 95

QUESTO DISEGNO È PROPRIETÀ PRIVATA E NON PUÒ ESSERE COPIATO, RIPRODOTTO O MOSTRATO A TERZI SENZA NOSTRA APPROVAZIONE SCRITTA.

CRUMAR		MODEL: T3	
BRAUN BT	Borland G.	REVISION	
DESIGNED BY	<i>Heel</i>	DATE	15/6/81

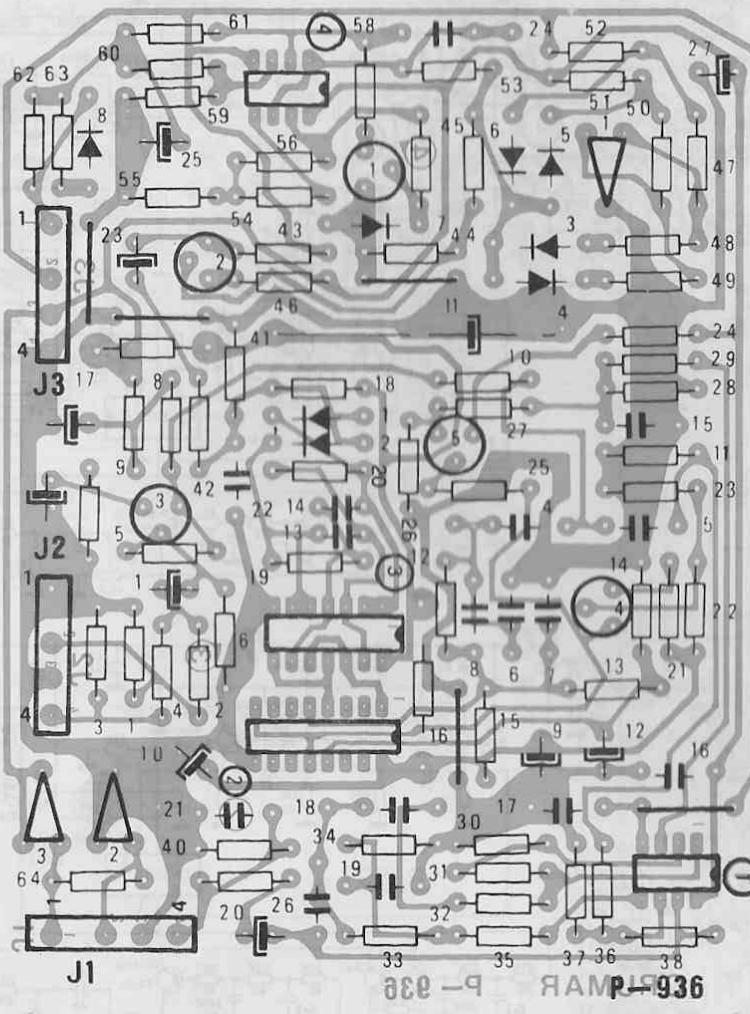


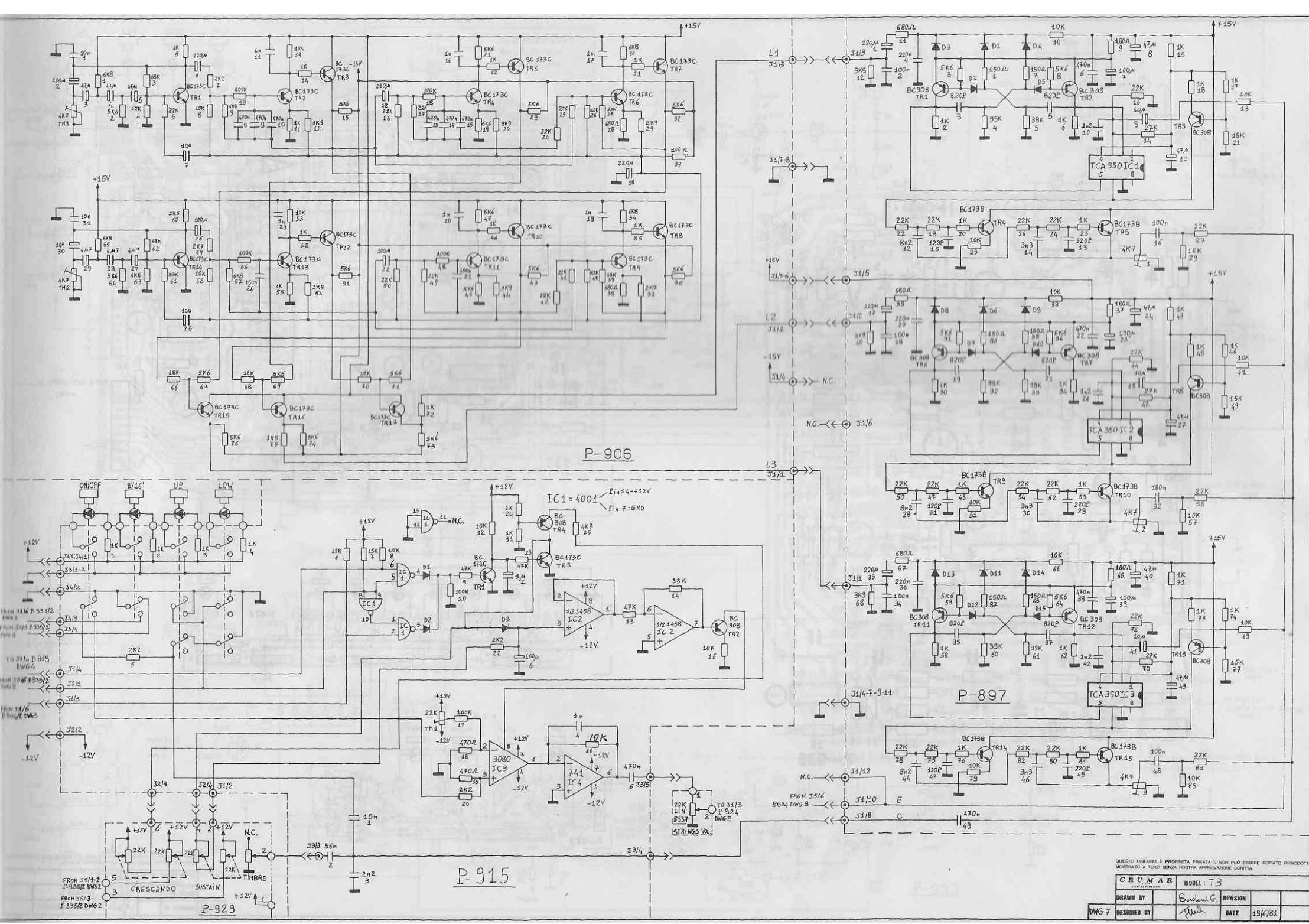
DISPOSITIVO INVENTATO E PROPRIETÀ PRIVATA E NON PUÒ ESSERE COPIATO RIPRODOTTO
MENTREVIATO A TERZI SENZA NOSTRA APPROVAZIONE SCRITTA

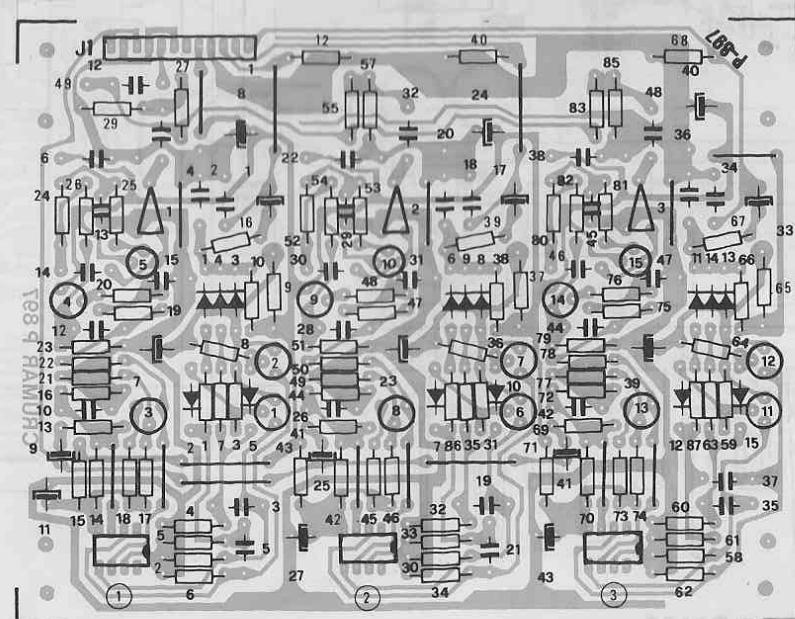
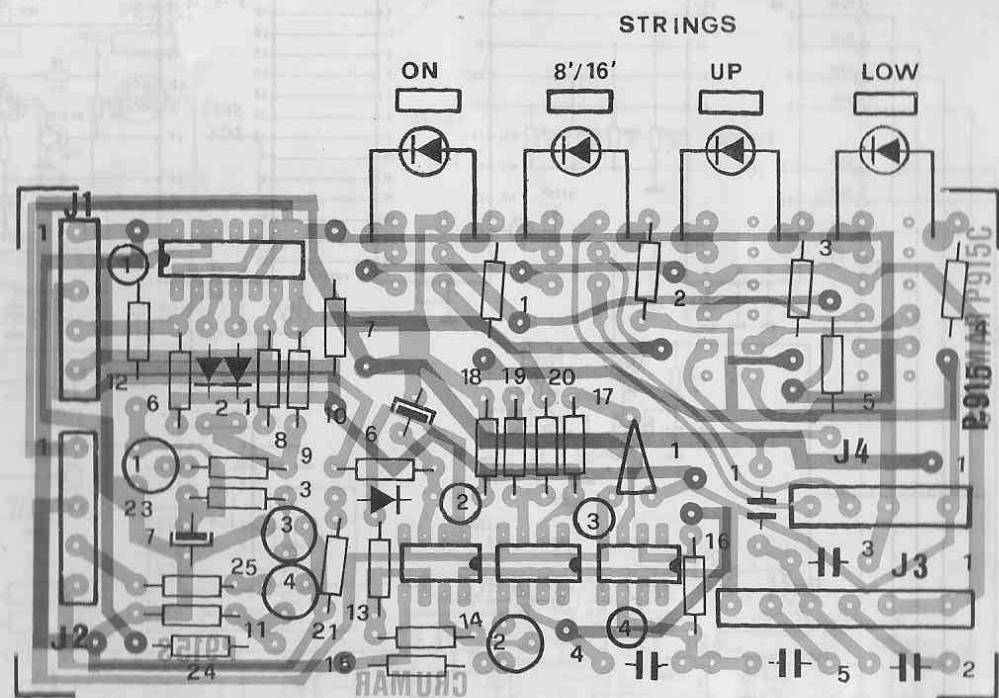
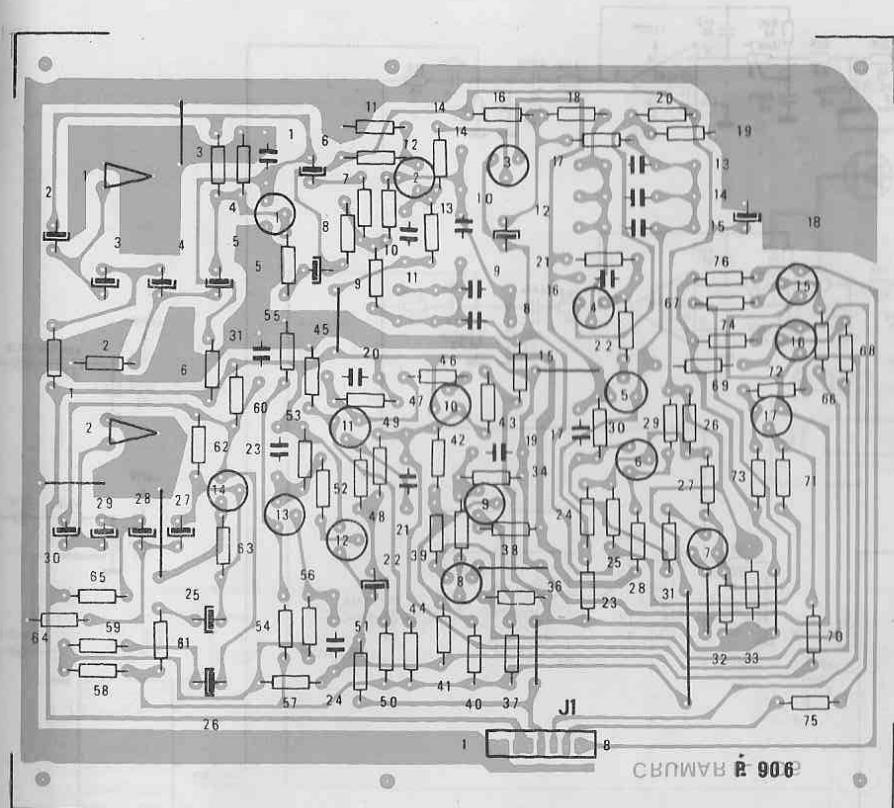
C.R.U.MARE MODEL: T-3

DRAWN BY: Bandiera G. REVISIONE:

DWG 6 DESIGNED BY: Bandiera G. DATE: 13/6/81

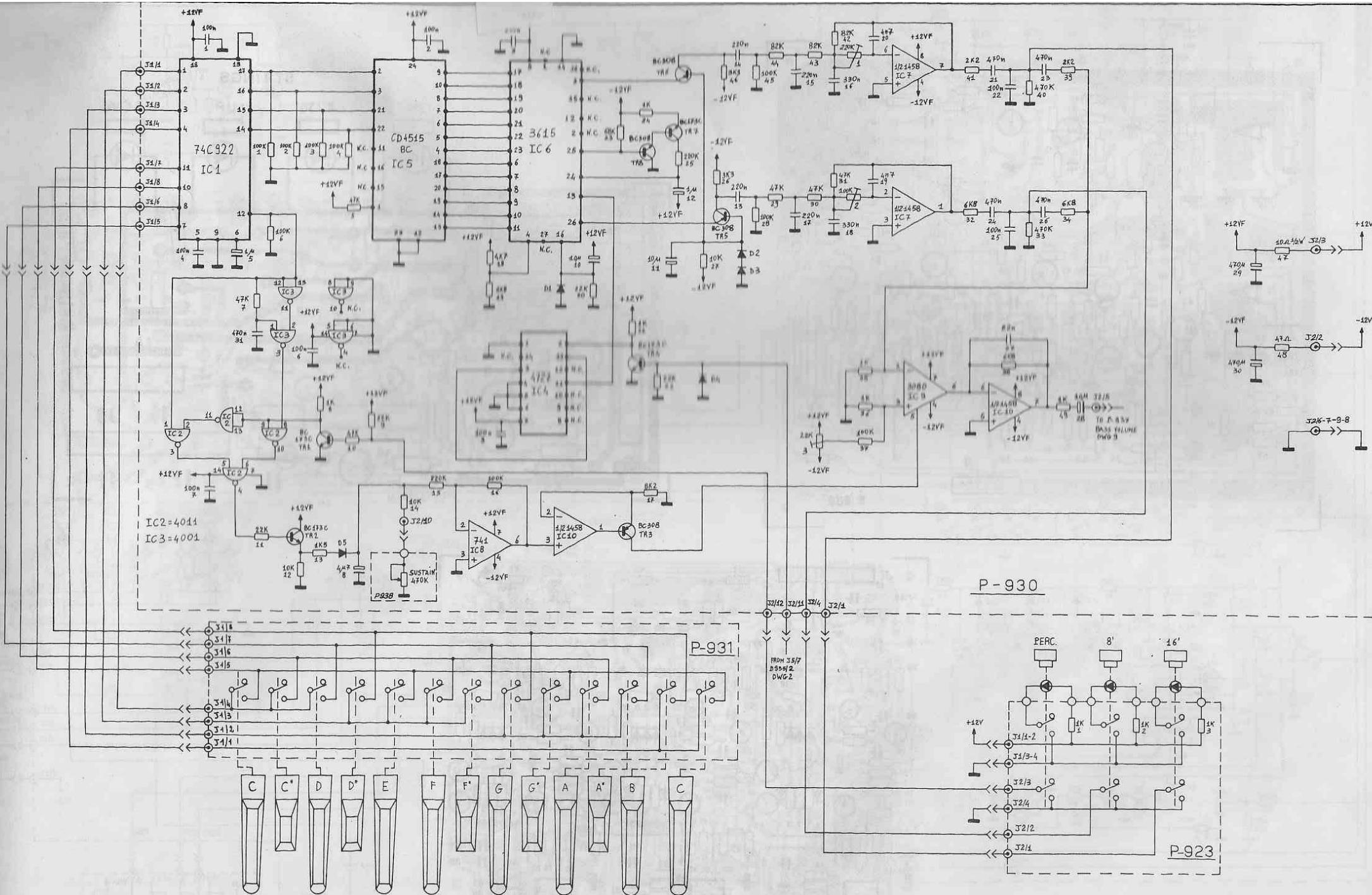






QUESTO DISEGNO È PROPRIETÀ PRIVATA E NON PUÒ ESSERE RIPRODOTTO SENZA SCRITTUALE APPLICATIVO DELLA DITTA
ACQUISTATO A TITOLO SINGOLARE DIRETTAMENTE DALLA DITTA

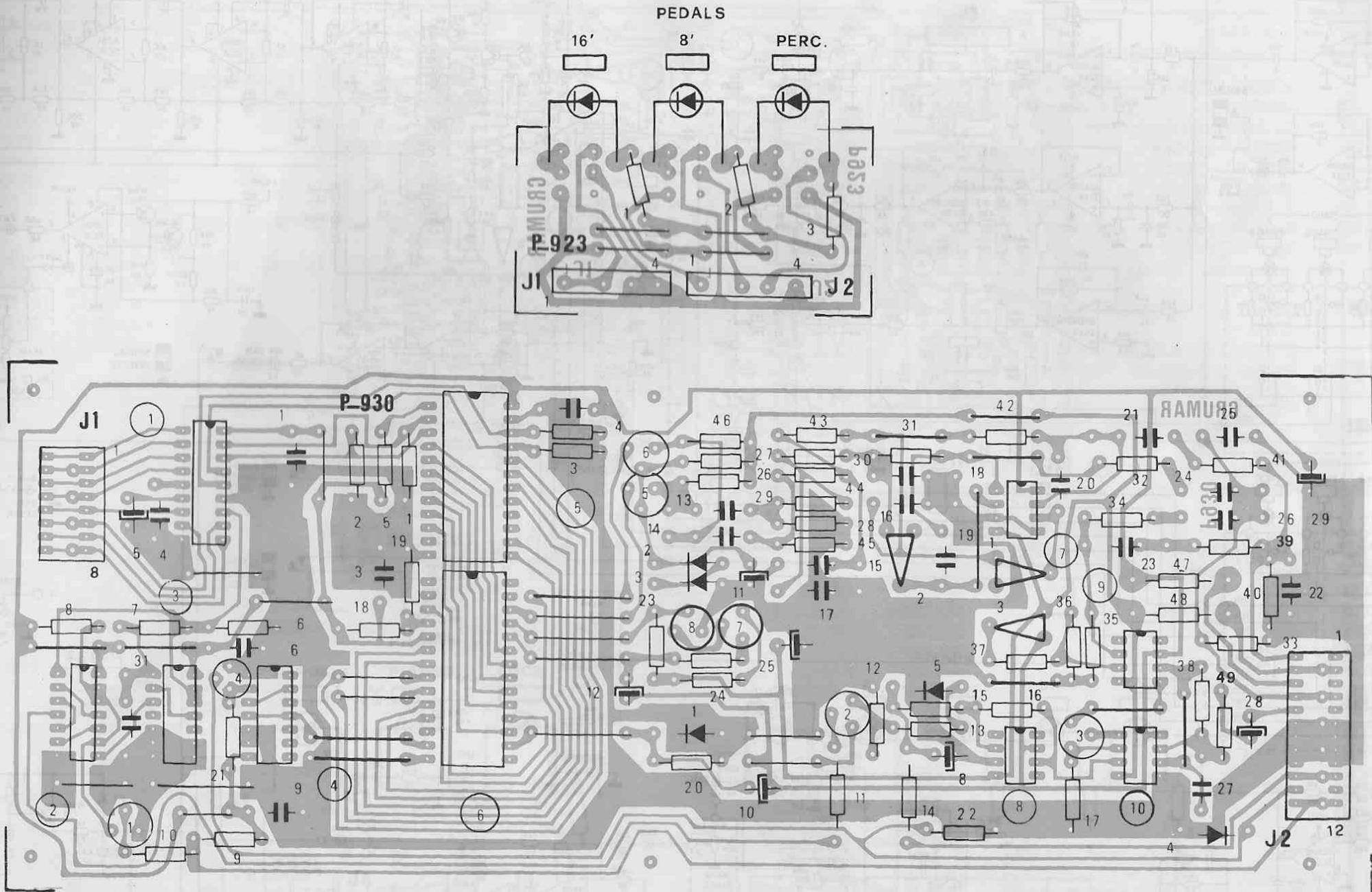
CRUMAR	Model 77
DRAWN BY	M. Gallo G.
DESIGNED BY	A. Di Natale
REVISED	8/81
DWG 7/A	100



PEDALBOARD

QUESTO DISEGNO È PROPRIETÀ PRIVATA E NON PUÒ ESSERE COPIATO RIPRODOTTO

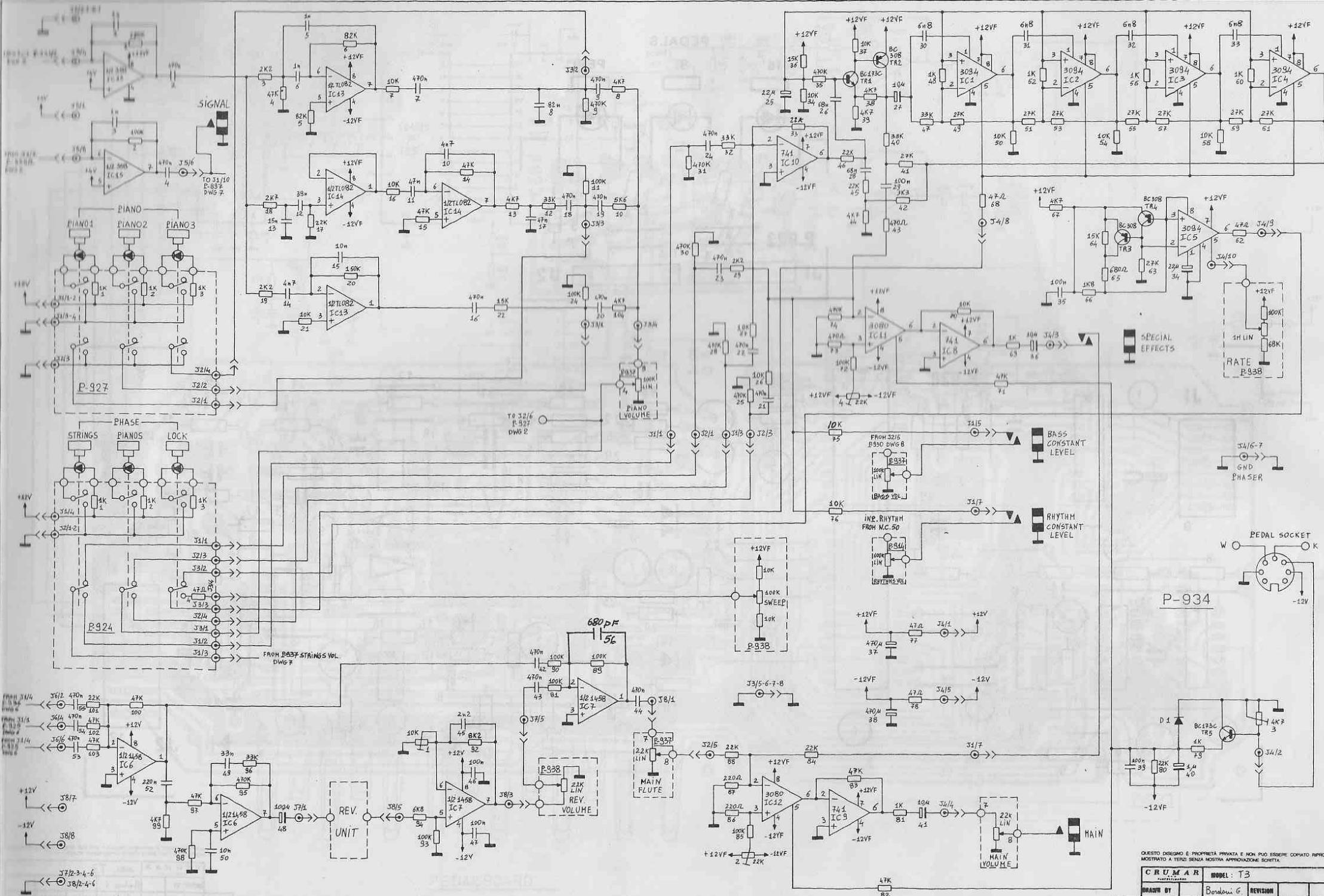
MOSTRATO A TERZI SENZA NOSTRA APPROVAZIONE SCRITTA.			
CRUMAR C. S. C. INC. CARLISBORG		MODEL : T3	
BORROWED BY	Bordoni G.	REVISION	
8 DESIGNED BY	<i>J. Sheld</i>	DATE	19/6/81

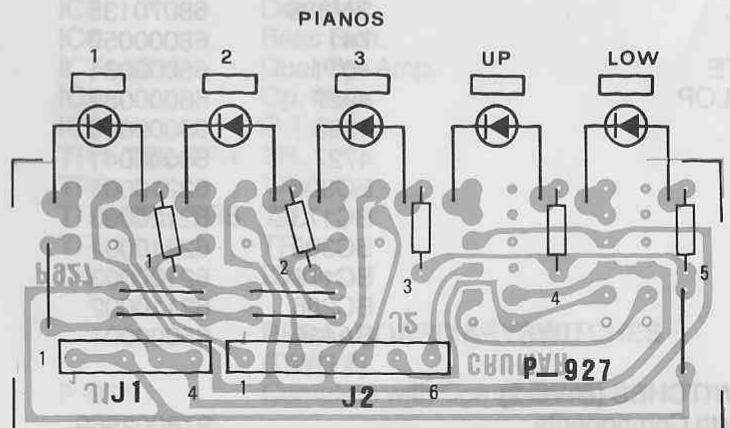
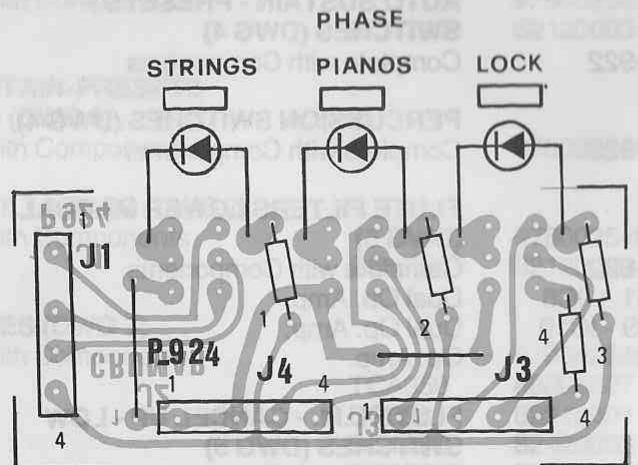
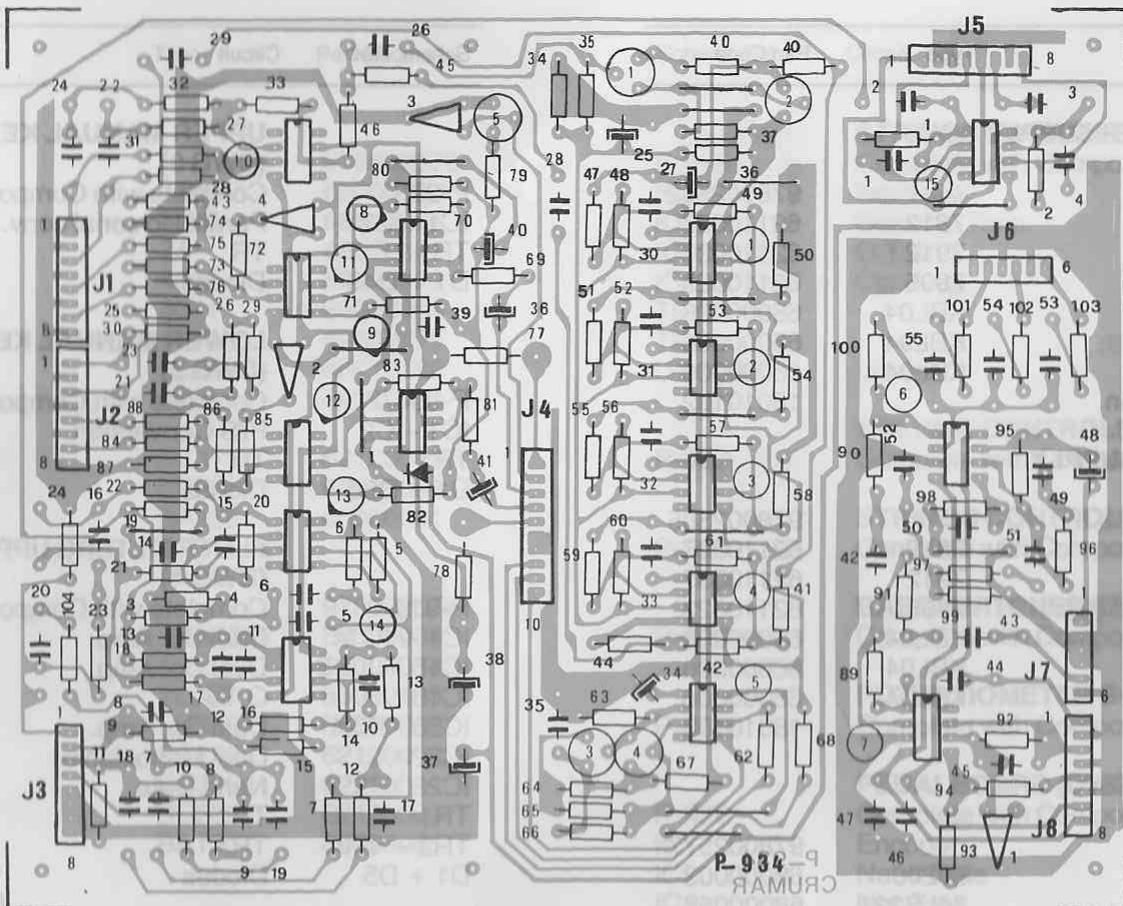


QUESTO DISEGNO È PROPRIETÀ PRIVATA E NON PUÒ ESSERE MOSTRATO A TERZI SENZA NOSTRA APPROVAZIONE SCRITTA.

CRUMAR MODEL: 73

DRAWN BY	Bordoni G.	REVISION
DWG#	1	DATE
DESIGNED BY	J. S.	REV.





MODEL T3

ELECTRONIC COMPONENT LIST

Schem. Ref.	Circuit	Type	Part Code
SEMKO VERSION - POWER SUPPLY (DWG 1)			
P-920	Complete with Components		978002562
RT1	Voltage Regulator	7812	62110027
RT2	Voltage Regulator	7912	62110037
RT3	Voltage Regulator	7805	62110023
PD1	Rectifier Bridge	KBL04	66000006
PD2	Rectifier Bridge	KBL04	66000006
PD3	Rectifier Bridge	KBL04	66000006
T64	Transformer SEMKO Version		18010102
CSA VERSION - POWER SUPPLY (DWG 1)			
P-920	Complete with Components		978002585
RT1	Voltage Regulator	7812	62110027
RT2	Voltage Regulator	7912	62110037
RT3	Voltage Regulator	7805	62110023
PD1	Rectifier Bridge	KBL04	66000006
PD2	Rectifier Bridge	KBL04	66000006
PD3	Rectifier Bridge	KBL04	66000006
T64	Transformer CSA Version		18010103
FLUTES - PIANO - STRINGS GENERATION (DWG 2)			
P-935/2	Complete with Components		978002577
IC1 - IC15	T.O.S.	50240	68000009
IC2	Master Oscillator	74LS221	68000058
IC3 - IC4	Strings - Piano - Gen.	SM302	68070165
IC5 ÷ IC7	Flutes Gen.	SM305	68070135
IC8	Op. Amp.	741	68000059
IC9 - IC10	NAND GATE	4011	68000034
IC12	J-K FLIP-FLOP	4027	68000089
IC13	Trigger	4093	68000050
IC14	Divider	4727	68000041
TR1 - TR17	TR.	BC308	62210001
TR2 ÷ TR5	TR.	BC173C	62120003
TR6 ÷ TR11	TR.	BC308	62210001
TR12 ÷ TR15	TR.	BC173C	62120003
TR16	TR.	BC286	62110002
D1 ÷ D6	Diodes	BA130	65000001
PIANOS SWITCHES (DWG 2)			
P-927	Complete with Components		978002569
POTENTIOMETER BOARD (DWG 2)			
P-938	Complete with Components		978002581

MODEL T3

ELECTRONIC COMPONENT LIST

Schem. Ref.	Circuit	Type	Part Code
UPPER MANUAL KEYSWITCHES (DWG 3)			
P-903	Complete with Components		978002545
IC1 - IC2	Parallel to serial conv.	SM304A	68070134
TR1	TR	BC173C	62120003
D1 ÷ D49	Diodes	BA130	65000001
LOWER MANUAL KEYSWITCHES (DWG 3)			
P-904/2	Complete with Components		978002546
IC1 - IC2	P/S Conversion	SM304A	68070134
TR1	TR	BC173C	62120003
D1 ÷ D85	Diodes	BA130	65000001
FLUTE FILTERS UPPER MANUAL (DWG 4)			
P-919	Complete with Components		978002561
IC1 ÷ IC14	Dual Op. Amp.	LM358	68030174
IC15 ÷ IC18	Dual Op. Amp.	1458	68000053
IC19	O.T.A.	3080	68000066
IC20 - IC21	Dual Op. Amp.	1458	68000053
IC22	Dual Monostable	74C221	68000099
IC23	Nand Gate	4011	68000034
TR1	TR.	BC308	62210001
TR2 ÷ TR4	TR.	BC173C	62120003
D1 ÷ D5	Diodes	BA130	65000001
AUTO SUSTAIN - PRESETS SWITCHES (DWG 4)			
P-922	Complete with Components		978002564
PERCUSSION SWITCHES (DWG 4)			
P-926	Complete with Components		978002568
FLUTE FILTERS LOWER MANUAL (DWG 5)			
P-932	Complete with Components		978002574
IC1 ÷ IC8	Dual Op. Amp.	LM358	68030174
IC9 - IC10	Dual Op. Amp.	1458	68000053
IC11	Op. Amp.	741	68030141
FLUTE L.M. - CANCEL UP - LOW SWITCHES (DWG 5)			
P-921	Complete with Components		978002563
VOLUME CONTROLS (DWG 5)			
P-937	Complete with Components		978002580

MODEL T3

ELECTRONIC COMPONENT LIST

Schem. Ref.	Circuit	Type	Part Code
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AUTO-SUSTAIN (DWG 6)

P-933	Complete with Components		978002575
IC1	Dual Op. Amp.	1458	68000053
IC2	O.T.A.	3080	68000066
IC3	Op. Amp.	741	68030141
IC4 - IC10	Binary Counter	4024	68010122
IC5 - IC9	Nand Gate	4011	68000034
IC6	Exclusive Or	4070	68000070
IC7	D Flip-Flop	4013	68010136
IC8	Static Shift Register	4031	68010164

TR1-TR2-

TR4-TR5

TR3

D1 ÷ D23

Diodes

R.S.S. (DWG 6)

P-936	Complete with Components		978002578
IC1	ADL	TDA1022	68000084
IC2	Nand Gate	4011	68000034
IC3	Dual Op. Amp.	TL082	68030163
IC4	Dual Op. Amp.	LM358	68000093
TR1 ÷ TR3	TR	BC239	62120003
TR4	TR	BC308	62210001
TR5	TR	BC239	62120003
D1 ÷ D8	Diodes	BA130	65000001

R.S.S. SWITCHES (DWG 6)

P-925	Complete with Components		978002567
TR1	TR.	BC173C	62120003

AUTO-SUSTAIN-PRESETS SWITCHES (DWG 6)

P-922	Complete with Components		978002564
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A.D.L. OSCILLATORS (DWG 7)

P-906	Complete with Components		978002548
TR1 ÷ TR17	TR.	BC173C	62120003

DELAY LINES (DWG 7)

P-897	Complete with Components		978002586
IC1 + IC3	A.D.L.	TCA350	68000007

TR1 ÷ TR3

TR4 - TR5

TR6 - TR8

TR9 - TR10

TR11 ÷ TR13

TR14 - TR15

D1 ÷ D15

Diodes

MODEL T3

ELECTRONIC COMPONENT LIST

Schem. Ref.	Circuit	Type	Part Code
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STRINGS SWITCHES (DWG 7)

P-915	Complete with Components		978002557
IC1	Nor Gate	4001	68000020
IC2	Dual Op. Amp.	1458	68000053
IC3	O.T.A.	3080	68000066
IC4	Op. Amp.	741	68000059

TR1		BC173C	62120003
TR2		BC308	62210001
D1 ÷ D3		BA130	65000001
	Diodes		

VOLUME CONTROLS (DWG 7)

P-937	Complete with Components		978002580
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STRINGS CONTROLS (DWG 7)

P-929	Complete with Components		978002571
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BASS SWITCHES (DWG 8)

P-923	Complete with Components		978002565
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POTENTIOMETER BOARD (DWG 8)

P-938	Complete with Components		978002581
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PEDALBOARD (DWG 8)

P-930	Complete with Components		978002572
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PEDALBOARD KEYSWITCHES (DWG 8)

IC1	Encoder	74C922	68000110
IC2	Nand Gate	4011	68000034
IC3	Nor Gate	4001	68000020
IC4	Divider	4727	68000041
IC5	Decoder	CD4515	68010162
IC6	Bass Gen.	3615	68000106
IC7 - IC10	Dual Op. Amp.	1458	68000053
IC8	Op. Amp.	741	68000059
IC9	O.T.A.	3080	68000066

TR1-TR2-TR4	TR.	BC173C	62120003
TR3	TR.	BC308	62210001
TR5-TR6-TR8	TR.	BC308	62210001
TR7	TR.	BC173C	62120003
D1 ÷ D5	Diodes	BA130	65000001

PEDALBOARD KEYSWITCHES (DWG 8)

P-931	Complete with Components		978002573
-------	--------------------------	--	-----------

FINAL PREAMPLIFIERS (DWG 9)

P-934	Complete with Components		978002576
IC1 ÷ IC5	O.T.A.	3094	68000098
IC6 - IC7	Dual Op. Amp.	1458	68000053
IC8 ÷ IC10	Op. Amp.	741	68030141